Complete Summary

GUIDELINE TITLE

Management of diabetic retinopathy.

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Management of diabetic retinopathy. Singapore: Singapore Ministry of Health; 2004 Jan. 32 p. [24 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Diabetic retinopathy (proliferative and non-proliferative) and/or clinically significant macular edema

GUIDELINE CATEGORY

Evaluation
Management
Screening
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Ophthalmology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To identify patients at risk of developing diabetic retinopathy
- To treat patients at risk of visual loss from diabetic retinopathy
- To minimize the side effects of treatment and there impact on the patient's vision and quality of life
- To foster a multi-disciplinary and holistic approach in the management of diabetes mellitus and its possible long-term complications

TARGET POPULATION

Patients with type 1 or type 2 diabetes mellitus, including pregnant patients with pre-existing diabetes mellitus

INTERVENTIONS AND PRACTICES CONSIDERED

Screening and Diagnosis

1. Fundal photography
2. Indirect ophthalmoscopy with slit-lamp biomicroscopy
3. Direct ophthalmoscopy through dilated pupils

Treatment/Management

1. Referral to ophthalmologist
2. Focal/grid macular laser treatment
3. Scatter laser treatment
4. Cataract surgery followed by laser treatment (when presence of cataract precludes adequate photocoagulation)
5. Vitreous surgery
6. Follow-up care

MAJOR OUTCOMES CONSIDERED

- Incidence of diabetic retinopathy
- Response to treatment
- Visual outcome (loss or preservation of vision)
- Quality of life

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials

Level Ib: Evidence obtained from at least one randomised controlled trial

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

Level III: Evidence obtained from well-designed nonexperimental descriptive studies, such as comparative studies, correlation studies, and case studies

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guidelines were developed by an expert workgroup appointed by the National Committee on Ophthalmology. The workgroup conducted a systematic review of current medical literature and obtained inputs from experts in the area of diabetic retinopathy.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft guidelines were presented to other ophthalmologists in the public and private sectors for their comments and then finalised and published.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations that follow summarize the content of the guideline. Please refer to the original guideline document for more detailed recommendations. Each recommendation is rated based on the level of the evidence and the grades of recommendation. Definitions of the level of evidence (Ia-IV) and the grades of

recommendations (A, B, C, and GPP) are defined at the end of the Major Recommendations field.

Detection and Screening for Diabetic Retinopathy

Detection of Diabetic Retinopathy

C - As patients with sight-threatening retinopathy may not have symptoms, life-long evaluation for retinopathy by fundal screening of diabetic patients is a valuable and necessary strategy (American Academy of Ophthalmology Quality of Care Committee, 1993; Kohner & Porta, 1991; American Diabetes Association, 1998; Aiello et al., 1998). (Grade C, Level IV)

Screening for Diabetic Retinopathy

C - It is commended that organization of the screening for diabetic retinopathy be the primary responsibility of the doctor-in-charge of the diabetic patients (Kohner & Porta, 1991). (Grade C Level IV)

GPP - Screening may be performed by fundal photography (preferred method), indirect ophthalmoscopy with slit-lamp biomicroscopy, or direct ophthalmoscopy through dilated pupils. In Singapore, fundal photography has been used for many years. The fundal photography facility should be made widely available to all medical practitioners who wish to send their patients for diabetic retinopathy screening. (GPP)

GPP - Patients with fundi that are poorly visualized due to media opacity should be referred to the ophthalmologist. (GPP)

Screening strategies depend on the rate of appearance and progression of diabetic retinopathy and on the risk factors that alter these rates. The recommended schedule for the initial and follow-up examinations is outlined in the table below.

Table. Eye Examination Schedule

Condition	Recommendation of 1st Exam	Routine Minimum Follow-Up
Type 1 DM	Within 3 to 5 years of diagnosis of diabetes	Yearly
Type 2 DM	At diagnosis	Yearly
Pregnancy in pre-existing DM	Prior to conception and during 1st trimester	Physician's discretion depending on results of 1st trimester exam

Adapted from American Diabetes Association Clinical Practice Recommendations 2004 (Fong et al., 2004)

Classification of Retinopathy

C - All diabetic patients who are found to have retinopathy by their physicians need to be referred to an ophthalmologist for evaluation (American Academy of

Ophthalmology Quality of Care Committee, 1993; Kohner & Porta, 1991; American Diabetes Association, 1998; Aiello et al., 1998). (Grade C, level IV)

See original guideline document for details about the classification of diabetic retinopathy.

Treatment of Diabetic Retinopathy

Rationale for Treatment

A - Early referral to an ophthalmologist is particularly important for patients with type 2 diabetes and severe non-proliferative (pre-proliferative) retinopathy, since laser treatment at this stage is associated with 50% reduction in the risk of severe visual loss and vitrectomy (American Diabetes Association, 1998; Aiello et al., 1998; Ferris, 1996). (Grade A, Level Ia)

Treatment Strategies for Diabetic Retinopathy

A - The following table shows recommended treatments for various degrees of diabetic retinopathy (Early Treatment Diabetic Retinopathy Study Research Group [ETDRS], 1985; ETDRS "Treatment techniques," 1987; ETDRS "Techniques for scatter," 1987; ETDRS, 1991; ETDRS, 1995).

Table. Treatment Strategies

Degree of Retinopathy	Treatment
No macular edema	None
Macular edema threatening or involving macular centre	Focal/grid macular laser
NPDR Mild/Moderate Severe/Very severe	None Consider scatter laser*
PDR Non high-risk & High-risk Advanced	Scatter laser without delay Scatter laser without delay+

NPDR - Non-proliferative diabetic retinopathy
PDR - Proliferative diabetic retinopathy
*Especially in older-onset patients (type 2)
+See Section 5.3 on vitreous surgery in the original guideline document

(Grade A, Level Ib)

Vitreous Surgery

GPP - It is advisable to refer cases requiring vitreous surgery to an ophthalmologist familiar with vitreoretinal surgery.

Sight-Threatening Diabetic Retinopathy with Cataract

GPP - In patients in whom the presence of cataract precludes adequate photocoagulation, cataract surgery followed by prompt laser treatment is recommended. However, laser treatment should be given before cataract surgery if fundal visibility permits.

Ophthalmic Follow-up of Diabetic Patients

C - The timing of the follow-up examination of patients with diabetic retinopathy is dependent on the status of the retinopathy.

Table. Ophthalmic Follow-up

Status of Retinopathy	Follow-up (months)
No retinopathy	12
Mild/moderate NPDR without retinal edema	6 to 12
Mild/moderate NPDR with retinal edema, but not threatening or involving macula	4 to 6
Mild/moderate NPDR with CSME or threatening the macula (Treat with laser)	1 to 4
Severe or very severe NPDR (Treat with laser)	1 to 4
PDR (Treat with laser)	1 to 4

Adapted from AAO summary Benchmarks, June 2001
NPDR - Non proliferative diabetic retinopathy
CSME - Clinically significant macular edema
PDR - Proliferative diabetic retinopathy

(Grade C, Level IV)

Definitions:

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials

Level Ib: Evidence obtained from at least one randomised controlled trial

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities

Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality

GPP (good practice points): Recommended best practice based on the clinical experience of the guideline development group.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for most recommendations (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of diabetic retinopathy resulting in prevention or reversal of visual loss and improved quality of life

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the

management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Clinical Audit

A parameter for clinical audit could be the percentage of diabetic patients (both type I and type II) that have their fundi screened at least annually.

All diabetic patients should have their fundi screened at least annually.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Patient Resources
Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Management of diabetic retinopathy. Singapore: Singapore Ministry of Health; 2004 Jan. 32 p. [24 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004 Jan

GUIDELINE DEVELOPER(S)

Singapore Ministry of Health - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Singapore Ministry of Health (MOH)

GUIDELINE COMMITTEE

Workgroup on the Management of Diabetic Retinopathy

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Workgroup Members: Dr Richard F.T. Fan, Consultant Ophthalmic Surgeon, Mt Elizabeth Medical Centre (Chairman); Dr Ang Chong Lye, Medical Director, Singapore National Eye Centre; Dr Au Eong Kah Guan, Head, Eye Department, Alexandra Hospital; Dr Chee Ka Lin, Caroline, Senior Consultant, Dept of Ophthalmology, National University Hospital; A/Prof Cheong Pak Yean, Cheong Medical Clinic; Dr Chuah Chee Leng, Gerard, Clearvision Eye Clinic; Dr Koh Hock Chuan, Adrian, Consultant, Vitreo-Retina Dept, Singapore National Eye Centre; Dr Ong Sze Guan, Head, Training & Education, Singapore National Eye Centre; Dr Tan Ban Hock, Billy, Ophthalmic Consultants Pte Ltd; Dr Yap Eng Yiat, Clearvision Eye Clinic

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Singapore Ministry of Health Web site.

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

AVAILABILITY OF COMPANION DOCUMENTS

Audit criteria and a continuing medical education (CME) self-assessment are available in the original guideline document.

PATIENT RESOURCES

The following is available:

- Management of diabetic retinopathy. Singapore: Singapore Ministry of Health; 2004. 6 p.

Electronic copies: Available in Portable Document Format (PDF) from the Singapore Ministry of Health Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This NGC summary was completed by ECRI on December 8, 2005.

COPYRIGHT STATEMENT

DISCLAIMER

NGC DISCLAIMER

Readers with questions regarding guideline content are directed to contact the guideline developer.

Date Modified: 10/9/2006